The Principles of Consistent Snow Management Estimating

Mike Mason, CSP
The LawnPro
The LawnPro was established in 1994. Over the past eighteen years we have expanded our services to include landscape / hardscape design and installation, and year round grounds management. We strive to build lasting relationships with honesty, commitment and professional service. This is true not only with our clients, but also with our employees and suppliers. We believe in providing superior service at competitive rates. We always work within your budget to create beautiful, sustainable grounds.
Overview of Presentation

- Take a birds-eye view of the estimating process
- Review/understand core terms and concepts
- Discuss real-world scenarios and highlight market strategies
What we won’t do

- Show you how to calculate a specific bid
- Discuss profit margins
- Make it snow once in July so that all your snow contracts come in early this year
Tools we will use

* SIMA Glossary of Terms (www.sima.org/glossary)
* SIMA Best Practices in Procurement: 52 week visual timeline (www.sima.org/timeline)
Throughout the presentation, we will highlight items that relate to market strategy, a key component of creating a consistent estimating process.
SIMA 52-Week Procurement Timeline for Snow Services

Available at www.sima.org/timeline
Estimating Workflow

- Site Cycle time(s)
- Resource projections

- Proximity to other accounts
- Salt logistics
- Portfolio mix
- Available capacity
- Nearby opportunities
- Relationship opportunities
- Up-sell opportunities

FINAL ESTIMATE
- Apply production rates with weather history
- Apply efficiency factors
- Add desired profit to final estimate
- Standardized services

Add from routed equipment/crews?
Add dedicated equipment/crews?
Section 1: Level of Service & Scope of Work
Section 1: Key Concepts
- Renewing existing customers
- Preparing for the bidding season
- Understanding Level of Service in RFP’s

Glossary Key Terms
- Level of Service (LOS)
- Snow Portfolio
- Trigger Depth
- Accumulation Threshold
- Scope of Work (SOW)
Review the portfolio of clients you have
  * Do you need to fire any clients?
  * What does your Snow Portfolio look like?
    * What mix of seasonal vs. per occurrence?
    * What is your financial risk in low vs. high snow years?

**Glossary Term**
**Snow Portfolio:** The total book of business managed by a snow contractor.
Snow Portfolio

* No estimating should be done without consideration of your entire snow portfolio
* Contracts signed that do not over-extend Production capacity
* Your portfolio can act as a hedge against Mother Nature
  * Best Practice: In areas where mixed contract types (seasonal vs. per occurrence etc.) are feasible, sell enough seasonal to cover as much of your overhead as possible
Portfolio Planning

What segments/niches exist in your market? Which ones are you focusing on? Which segments are price focused? Which are quality focused?

Potential market segments:
National/regional management work
High risk ‘Zero tolerance’ accounts
Medical facilities/hospitals
Schools
Industrial
Preparing for New Estimating

Key consideration:

* Understand the clients Level of Service, and flow that LOS into a projection of needed resources
Level of Service (LOS): A description of the expected outcome(s) on a site or set of sites from the completed performance of snow and ice management services. Level of Service typically defines expectations for surface conditions at specific times (completion times) or timeframes, or alternate/additional expectations for events that exceed a defined timeframe and/or a defined amount of accumulation(s).
START TIMES
(Triggers/Thresholds)

+ COMPLETION TIMES

+ EXTREME WEATHER SCENARIO PLANNING

+ DESCRIPTORS OF SURFACE CONDITIONS
(i.e. learn of snow and ice, etc.)

= LEVEL OF SERVICE (LOS)
Best Practice

* Understand the true Level of Service and ensure your estimates take into account the desired timing of service completion.
  * Keep in mind that completion time includes winter events, their timing, and their severity
  * Site completion times will directly impact your site and route cycle times (described later)
Remember...

* Level of service can be for
  * One site
  * Multiple *service areas* on a site (back lot vs. front etc.)
  * Must create a process that allows for several LOS service areas to be combined in a final estimate
  * Example: Retail site with post office

[Glossary Term]

**Service Area**: Specific locations on a site where some portion of work will be performed as a part of the service agreement.
Other LOS Variables

* Completion Time(s)

* Start Times
  * Trigger Depth
  * Accumulation Threshold

* Descriptors
  * ‘Zero Tolerance’, ‘snow removed’, etc.

[Note: Should we add in Zero Tolerance definition here?]
Adding sales by finding sites that are in close proximity to current clients but have different desired completion times is a quality strategy to grow while staying efficient.

Example: Service a grocery store adjacent to a movie theater.
Completion Time(s)

Glossary Term

**Completion Time:** The specific time, time range or set of times for completing service expectations agreed upon in the Level of Service (e.g. clear by 7 a.m.; clear between 7 - 8 a.m.; clear 2 hours after snow event ends, etc.).
* Without a time, time range or set of times for completing service, an understanding of LOS cannot be reached.
* Clarifying questions during the sales process are typically used by contractors to understand timing
  * ‘So what happens if it starts snowing 1 inch an hour at 9 am on a Monday…’
**Trigger Depth**

*Trigger Depth*: The agreed upon measurable amount of accumulated snow or ice wherein snow and ice management services will be dispatched.

*Key word is* dispatched
As Trigger Depth goes up, efficiency goes down

Trigger depth should be discussed and understood by both parties prior to contract signing

Recommended that a verifiable third party serve as the measurement, the closer to the site the better
Accumulation Threshold

[Glossary Term]

**Accumulation Threshold**: The agreed-upon maximum amount of snow or ice accumulation acceptable. Not to be confused with Trigger Depth.

* Emphasis on *maximum*
Accumulation Threshold – Key Points

- Goal is to service the account so the maximum is never reached
- Leaves discretion to the contractor
Contracts with thresholds should have specific guidelines for above-average storms.
How do we find LOS?
RFP’s don’t have an LOS section, you must find:

- Descriptors of site outcomes (clear sidewalks, blacktop, snow piles removed, etc.)
- Completion Times
- Start times (Hint: Triggers and Thresholds)
There is a lot of confusion in terms of the word ‘scope’ in our industry...
Scope of Work

Glossary Term

**Scope of Work (SOW):** Defines the service criteria (e.g. snow clearing, ice management, etc.) and specific areas to be serviced on a site or set of sites. The SOW can include any issues that may impact the execution of service (i.e. poor site drainage, slopes/hills etc.).
Scope of Work

- Site Size
- Site Complexity
- Services Needed
  (snow clearing, sidewalks, hauling, etc.)

= Scope of Work (SOW)
Scope of Work

* Defines what services/methods are acceptable (and those that are not acceptable)
* Identifies site-specific issues that can impact service
LOS and SOW

- Start Times (Triggers/Thresholds)
- Completion Times
- Site Size
- Site Complexity
- Extreme Weather Scenario Planning
- Descriptors of Surface Conditions (i.e., learn of snow and ice, etc.)
- Services Needed (snow clearing, sidewalks, hauling, etc.)
Questions?
Section 2: Resource allocation projections and cycle timing
Section 2: Key Concepts
• Managing the Resource Allocation Projection process
• Understanding Production Capacity
• Defining and understanding Cycle Time

Glossary Key Terms
• Production Rate
• Production Capacity
• Cycle Time
• Resource Allocation Projection
Estimating for snow involves synthesizing a lot of information that is constantly changing, including:

- Number of signed contracts (renewals and new)
- How many hours of production you have available based on your current equipment & manpower
- Type, size, and location of signed contracts
[Glossary Term]

Resource Allocation Projection: A process of estimating the amount of labor, equipment and materials required for meeting the Level of Service. It typically will include a synthesis of Accumulation Threshold and/or Trigger Depth; Completion Times; and historical weather data, including accumulation amounts and frequency. Also takes into account site logistics, route density, travel times and proximity of resources (labor, equipment, materials) allocated for other sites.
Resource allocation projection
What impacts your projections?

* Site and route cycle times
* Client needs change
* Deicing materials in short supply
* No rental equipment available
* New sales coming in every day
* Many more examples
[Glossary Term]

**Cycle Time**: The total estimated time it takes to service a site or set of sites (route) once (aka a single cycle). Cycle Time is influenced by a variety of factors, including Level of Service and production rate(s).
Cycle Time

* This is key to relating the true LOS and desired outcomes to your final estimate
* Some variables that can change your site cycle time
  * Production hours (type/size/number of equipment and people)
  * Level of Service requirements
    * Prioritization on the site (low priority areas etc.)
SCENARIO 1: 2” trigger and one routed plow truck

2” TRIGGER + Truck = 3 HOURS

SCENARIO 2: 2” trigger and one piece of dedicated (non-routed) equipment

2” TRIGGER + Truck = 1 HOUR
Purpose of Cycle Time

* Allows you to finalize site-specific hours of production, tied to your production rates
* Helps you make decisions related to allocation of resources on a site while taking LOS into consideration
* Useful in scenario-based sales discussions to determine true LOS expectations
Before you estimate a site

* You need to calculate a cycle time for the site
* You must determine if the site is tied to routed equipment/crews or warrants its own dedicated equipment/crew(s) – or both!
* Remember that changes to site cycle times based on equipment allocations are directly related to your total available hours of production (called Production Capacity)
Production Capacity

[Glossary Term]
Production Capacity: The overall available service potential based on calculated production rates for equipment, materials, labor, and subcontractors.
TOTAL PRODUCTION CAPACITY/EQUIPMENT
(in hours)

TOTAL PRODUCTION CAPACITY/LABOR
(in hours)
Goal of capacity

- Understanding the big picture of allocating resources across a portfolio will aid in the estimating process.
- This is achieved by understanding Production Capacity.
- Ensures you don’t ‘oversell’.
Production Capacity

- Best calculated in a spreadsheet
- Capacity can be increased by renting equipment, buying equipment, hiring more labor, or subcontracting
- Spreadsheets are available that allow you to calculate production hours by site with a link to your overall production capacity
Production Capacity

* Keep at least 10-20% capacity in reserve
  * Stuff breaks
  * It snows really bad sometimes
  * New opportunities mid-season
SCENARIO 1: 2” trigger and one routed plow truck

2” TRIGGER + = 3 HOURS SITE CYCLE TIME

SCENARIO 2: 2” trigger and one piece of dedicated (non-routed) equipment

2” TRIGGER + = 1 HOUR SITE CYCLE TIME
Impact on capacity

- What would your cycle time be if you pulled one site out of that route? What does that mean for each customer on the route?
- How would such a change impact your overall production capacity for routed equipment?
- How can you use this to ask good questions of the client to further determine their true LOS?
CAPACITY CALCULATIONS FOR PLOWING OPERATIONS

Step 1 - Create a list of properties already sold. You may choose to include properties likely to be sold also. Enter in column A.

Step 2 - Input an efficiency rating % for each property. Typical rates are: A = 100%, B = 85%, C = 70%. Enter in column B.

Step 3 - Input acres for each property by equipment type. Enter in columns C - I. One acre equals 43,560 square feet.

### Acres Allocated by Equipment by Property

<table>
<thead>
<tr>
<th>Property Name</th>
<th>Efficiency</th>
<th>Pickup w/ 8' Blade</th>
<th>Skid w/ 8' Pusher</th>
<th>Skid w/ 10' Pusher</th>
<th>Backhoe w/ 12' Pusher</th>
<th>Backhoe w/ 14' Pusher</th>
<th>Loader w/ 14' Pusher</th>
<th>Loader w/ 16' Pusher</th>
<th>Total Acres</th>
<th>Conversion</th>
<th>Sq Ft</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ferny’s Furniture (already have)</td>
<td>100%</td>
<td>2.25</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>2.25</td>
<td>98,010</td>
<td></td>
</tr>
<tr>
<td>Drug’s ‘R’ Us (had last year)</td>
<td>100%</td>
<td>1.95</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>1.95</td>
<td>84,942</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good Eats/Thirsty Man (considering)</td>
<td>100%</td>
<td>2.00</td>
<td>0.00</td>
<td>0.00</td>
<td>4.00</td>
<td>0.00</td>
<td>7.70</td>
<td>13.70</td>
<td>596,772</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cozy Hotel (just acquired)</td>
<td>100%</td>
<td>0.93</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.93</td>
<td>40,511</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sleepy Inn (just acquired)</td>
<td>100%</td>
<td>0.93</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.93</td>
<td>40,511</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td></td>
<td><strong>8.06</strong></td>
<td><strong>0.00</strong></td>
<td><strong>0.00</strong></td>
<td><strong>4.00</strong></td>
<td><strong>7.70</strong></td>
<td><strong>0.00</strong></td>
<td><strong>19.76</strong></td>
<td><strong>860,746</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Step 4 - Input production rates for each piece of equipment. Typically, this is the acres per hour for a 1-3” normal snowfall on an A lot.

### Production Rates by Equipment

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Pickup w/ 8' Blade</th>
<th>Skid w/ 8' Pusher</th>
<th>Skid w/ 10' Pusher</th>
<th>Backhoe w/ 12' Pusher</th>
<th>Backhoe w/ 14' Pusher</th>
<th>Loader w/ 14' Pusher</th>
<th>Loader w/ 16' Pusher</th>
<th>Acres per Hour</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.00</td>
<td>1.80</td>
<td>1.90</td>
<td>1.20</td>
<td>1.40</td>
<td>1.80</td>
<td>2.20</td>
<td></td>
</tr>
</tbody>
</table>

*(Note: these production rates may or may not be accurate for you. You will want to validate or modify these.)*

### Production Hours by Property

*(Note: this section will auto-fill. Formula = acres/production rate/efficiency rating)*

<table>
<thead>
<tr>
<th>Property Name</th>
<th>Pickup w/ 8' Blade</th>
<th>Skid w/ 8' Pusher</th>
<th>Skid w/ 10' Pusher</th>
<th>Backhoe w/ 12' Pusher</th>
<th>Backhoe w/ 14' Pusher</th>
<th>Loader w/ 14' Pusher</th>
<th>Loader w/ 16' Pusher</th>
<th>Total Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ferny’s Furniture (already have)</td>
<td>2.25</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>2.25</td>
</tr>
<tr>
<td>Drug’s ‘R’ Us (had last year)</td>
<td>1.95</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>1.95</td>
</tr>
<tr>
<td>Good Eats/Thirsty Man (considering)</td>
<td>2.00</td>
<td>0.00</td>
<td>0.00</td>
<td>3.33</td>
<td>0.00</td>
<td>4.28</td>
<td>0.00</td>
<td>9.61</td>
</tr>
<tr>
<td>Cozy Hotel (just acquired)</td>
<td>0.93</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.93</td>
</tr>
<tr>
<td>Sleepy Inn (just acquired)</td>
<td>0.93</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.93</td>
</tr>
<tr>
<td><strong>Totals (Used Capacity)</strong></td>
<td>8.06</td>
<td>0.00</td>
<td>0.00</td>
<td>3.33</td>
<td>0.00</td>
<td>4.28</td>
<td>0.00</td>
<td>15.67</td>
</tr>
</tbody>
</table>

Step 5 - Determine your cycle time. This is the number of hours you wish to complete one full cycle. Input here> 5.00 Hours

Step 6 - Input the number of each piece of equipment you have available as a PRIMARY pieces of equipment.
You can use your capacity to help create a sense of urgency, reminding clients that they don’t have a lot of time to shop around.

Discussions with clients related to dedicated vs. routed equipment can help you understand their LOS, and help them see price of service as a direct reflection of their desired LOS.
Questions?
Section 3: The building blocks of a quality snow estimate
Best Practices – Key Concepts
• Basic building blocks of snow estimate
• Tracking your production rates and tying them to weather history
• Understanding efficiency factors

Glossary Terms
• Efficiency factor
• Snow clearing
• Snow removal
Basic Building Blocks

**LOST (Trigger/Thresholds)**
- Start times
- Completion times
- Extreme weather scenario planning
- Descriptors of surface conditions (i.e., learn of snow and ice, etc.)

**SOW (Site Complexity)**
- Site size
- Extreme weather scenario planning
- Services needed (snow clearing, sidewalks, hauling, etc.)

**Estimating Tools**
- Production rates
- Efficiency factors
- Standardized services

**Weather Variables**
- 5-10 year snowfall averages
- Average # of normal events
- Average # of severe events
What do you need to develop a production rate?

1. A duration of time (hours, minutes)
2. Man hours involved (crew sizes vary)
3. An amount of work produced (# of inches cleared, tons of salt applied)
4. Equipment used (plow w/8.5” v-blade)
5. Materials used (bulk salt, CaCl)
6. Measurement of an area (sq ft, acres)
How do you get them?

- Measure everything (lots, walks, docks, etc.)
- Learn how to work with spreadsheets
- Cost out every detail, including labor, materials and equipment
- Create event-specific tracking statements
- Have your team write down everything
- Use SIMA’s production rates as a starter
What types should you track?

- Normal events
- Heavy events
- Blizzard/extreme events
- Rates should be as specific to your company as possible
Well-tracked production rates enable you to apply historical weather activity to your estimating process, a crucial step in getting better estimates that protect your company.

- Production rates must account for different accumulations, which can be multiplied by # of average events.
Example – Weather + Production Rate

* Average number of 1-2” snow storms annually = 10
  * Plowing 1 acre per hour typical for less than 2”
  * 10 events x 1 hour = 10 hours of estimated plowing time

* Average number 2-4” snow storms annually = 4
  * Plowing 1.5 acres per hour for over 2”
  * 4 events x 1.5 hours = 6 hours estimated plowing time

*These numbers are for example only*
Weather variables must be calculated into any quality estimate, but so must the complexity of a site.

What impacts site complexity? Obstacles, layout, topography, traffic patterns, and more.

Must use an efficiency factor to account for this in your estimating process.
Efficiency Factor

[Glossary Term]

- **Efficiency Factor**: An approach used by a snow contractor to estimate the level of difficulty for servicing a particular site, parking lot, or area. Considers layout, topography, obstacles, and unique physical characteristics that will impact plowing and other services. Uses some type of multiplier applied to a Production Rate to determine a modified Production Rate taking loss of efficiency into account. (Example an A Lot = no obstructions; 100% efficiency, B Lot = moderate obstructions; 90% efficiency, etc.).
Efficiency Factors

Example:

- 5000 square feet of sidewalk takes 2.5 man hours with a 2 cycle push type snow blower
  Production Rate = 2000 square feet per hour

* Allow for difficulty factors- for example:

  - A lot = 100% efficient (no obstructions)
  - B lot = 85% efficient (some obstructions)
  - C lot = 70% efficient (a lot of maneuvering and obstructions)

* Example: B lot = 2000 \times 0.85 = 1700 \text{ square feet/Hour}
Efficiency Factors

- The physical way you correlate site difficulty/complexity to a divider that accounts for the loss in efficiency
- Direct way to site complexity in the Scope of Work to an equation
Measuring Best Practices

* Measure length & width of all areas
* Establish measurements by category
  * IE: Plowing, shoveling, snow blower, salting, etc.
* List and tabulate totals for each category
* Total sq footage ÷ 43,560 (1 acre) when necessary to convert into acreage
* Apply measurements against production rates to establish time needed to perform the individual tasks
By standardizing your service offerings from Contract -> Estimate -> Billing, you will be consistent

You can estimate any way you would like (seasonal, per occurrence, etc.) if you have a consistent estimating process that bills for your essential services in some form

You can communicate clearly what your services are to prospects
Example of Standard Services

- Snow removal
- Snow clearing
- Snow relocation
- Snow stacking
- Snow melting (non-chemical)
- Deicing
- Anti-icing
- Ice monitoring

All of the above terms are well-defined in the SIMA glossary
Define your services

- **Snow Clearing**: The moving of accumulated snow from the surface of a defined service area. Synonyms: Snowplowing, or Snow Pushing.
- **Snow Removal**: The physical act of taking snow completely away from a site during or after an event.
In-season selling

Potential services that can be added:

* Snow hauling
* Ice Monitoring
* Roof snow management
* Ice dam clearing
* Snow melting (non-chemical)
* Snow stacking/relocation
* Emergency clearing/adding mid-season clients
Estimating Workflow

- Site Cycle time(s)
- Resource projections

Add from routed equipment/crews?
Add dedicated equipment/crews?

Proximity to other accounts
Salt logistics
Portfolio mix
Available capacity
Nearby opportunities
Relationship opportunities
Up-sell opportunities

FINAL ESTIMATE
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LOS
SOW
EXISTING PORTFOLIO
Please find the session survey in SIMA’s Guidebook app or go to the following link to give your feedback for this session!

https://www.surveymonkey.com/r/standTerms